

frenchey arm test. In addition, we used a system of 3D movement analysis in order to study the effects of the rehabilitation program on the reorganisation of the motor control.

Results.— The score on the Fugl-Meyer motor scale was improved so as in the other tests. We noted an improvement of the Fugl-Meyer score of 14% in the group which benefited of the rehabilitation program carrying out automatic motivity whereas the improvement of the Fugl-Meyer score was 5% in the control group.

Discussion.— It seems that the stimulation of the automatic motivity leads to an improvement of the gripping ability of the patient with hemiplegia. An explanation may lie in the decrease of attentional abilities attract. We can make the hypothesis that stimulating automatic motivity could increase the activation of sensory-motor loops during action or stimulate the recovery of automatic components of action regulation.

This is a preliminary result. This trial has to be continued for 2 years in order to include 32 hemiplegic patients so as to improve the statistical power of the results.

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Pressure ulcer prevention in spinal cord injury subjects using the TexiSense pressure sensing textile

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Keywords: Pressure ulcers; Pressure sensor; Prevention; Biomechanical modeling

Goals.— A pressure ulcer is an ischemic skin lesion stemming from a persistent compression of the soft tissues between a hard surface and bony prominences. This complication is particularly harmful for the spinal cord injury subjects due to sensorial and motor deficiencies but also to the associated vegetative paralysis. Unlike an able-bodied subject, the spinal cord injured person seated in his or her wheelchair does not automatically change position when overpressures occur. Pressure ulcer prevention is essential to avoid the functional, psychological and social consequences, as well as important economical effects (major and costly medical treatments).

Materials and methods.— The TIMC-IMAG and AGIM laboratories, associated with the IDS and TexiSense companies propose an ulcer prevention prototype based on a 100% textile pressure sensing fabric able to measure the pressures at the interface between the wheelchair cushion and the buttocks. The flexibility of the fabric makes it possible to integrate the pressure sensor between the cushion and its cover. The prototype comprises:

- a textile pressure sensor covering the cushion and placed on the wheelchair seat;
- a control unit connected to the sensor and wirelessly linked to tactile and visual actuators;
- tactile and visual actuators such as a vibrating watch (and eventually a smart-phone) used to raise an alert in case of overpressure.

Results.— The pressures are measured in real time and a signal processing algorithm implemented in the control unit warns the subject when atypical overpressure patterns (in magnitude and/or duration) are identified. This algorithm relies on a biomechanical model of the subject's buttocks to estimate the internal stresses within the soft tissues and at the vicinity of bony prominences from the external pressures measured at the skin surface. It has been acknowledged that the most serious deep ulcerations are triggered by these internal stresses.

Discussion.— The prevention technique presented here makes it possible to continuously monitor the evolution of skin pressures in a way compatible with the daytime activities of the subject. The computation of internal stresses within the

each considered person's morphology.

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Functional independence measure (FIM) in 2011

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Keywords: FIM; Functional independence measure; Burden of care; Database; IFRH

Aim.— Current use of FIM in France.

Material.— Questionnaire on the SOFMER website for French PMR practitioner. Questions are about: (1) daily use of the FIM in facilities, (2) its use in patient files, (3) training users, (4) interpretation of results, (5) medico-economic consequences, (6) assessment of the care burden, (7) patients' follow-up, (8) clinical research, (9) language tool between professionals, (10) potential interest in the constitution of a French national database. A last question would consist in the criticisms of the FIM tool in order to cancel it and replace it by creating a brand new one.

The results will be explained on the Sofmer Meeting in Nantes. Since the FIM was inserted in France 20 years ago [1], it has been given the status of Gold Standard. Most of MPR teams use it as a tool of interdisciplinary communication to refer to the independence of disabled people and the burden of cares. Yet, an international copyright owned by UDSMR in Buffalo (US) curtails scientific publications.

Discussion.— The Federative Institute of Research on Disability suggests to develop a national data base based on information collected by PMR teams/facilities using the FIM. Its aim is to create the first part of a platform of tools for clinical assessment, to be used by PMR and social professionals (comparative data based on groups of patients and pathologies... [2]) and to enable international collaborations.

Conclusion.— A consensual tool of the functional independence and of cares burden is essential to interdisciplinary communication, in the field and for clinical research. Will the FIM succeed in it?

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Participation assessment according to ICF: Preliminary results of the assessment grid of activity and participation (G-MAP)

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Keywords: ICF; Participation; Assessment; Traumatic brain injury; Schizophrenia

Community participation is a major challenge for most disabled patients. However, current assessments of participation lack a theoretical base, making assessment problematic. The ICF taxonomy (WHO, 2000) of activity limitation and participation restriction provides an interesting framework.

Aims.— The present study aims at developing a new, ICF-derived assessment tool of participation restriction in two populations suffering from psychic or cognitive disability: schizophrenia and traumatic brain injury. **Methods.**— Items have been selected from international literature, clinicians and proxy opinions. A

special attention was paid to contextual and environmental factors. The final grid (G-MAP) was administered to 15 subjects with traumatic brain injury (TBI group) and 15 subjects with schizophrenia (TS group). Assessments of cognition, neurobehaviour, psychological and psychosocial functioning were also performed. **Results.**— The G-MAP is a 26 items tool related to 6 ICF sections, providing ordinal rating of activity limitations, participation restriction and contextual factors (social support, attitudes, systems and politics) for each item. The internal consistency of activity limitations ($\alpha=0.89$) and of participation restriction ($\alpha=0.89$) is satisfying. We observed no difference on psychological variables between the two groups, except for a lower social support in TS group. Results of G-MAP underline that the two groups are confronted with the same activity limitations in personal care, leisure and community life (non significant U of Mann-Whitney). However TS group seems to be more limited than TC group in interpersonal relationships, economic and social productivity and domestic life. TS group is also more concerned by participation restriction than TC group, except for community life. **Conclusion.**— The G-MAP is a useful, feasible and relevant tool for assessment of psychic or cognitive disability. It allows assessing in a detailed and individualized way participation restriction of a patient in his environment.

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Patient reported outcome in neuromuscular diseases: The QoL-NMD. Qualitative and quantitative generation of items

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Keywords: Questionnaire; Quality of life; Muscular diseases; Psychometric; Focus group; Delphi

Introduction.— There are very few tools capturing subjective perceptions of people with specific motor neuromuscular diseases. The theoretical approach used for the construction of QoL-NMD tool based on the gap between the aspirations of the subject and resources. Experiences of this gap are defined as a qualitative measure known as health related quality of life or subjective patient reported outcome.

Materials and methods.— A multidisciplinary committee of experts (practitioners, psychologists, neuropsychologists, methodologists, biostatisticians, linguists, patients) was formed. It established the specification charges, reached consensus on major decisions such as domain choices, generation of items, the metric used. Patients were suffering from slow motor neuromuscular disease. Five focus groups were made in four French centers (Angers-Nantes, Créteil, Lille, Reims). Each verbatim from these focus groups was then analyzed in terms of frequency of the CIF approached by patients. Items were constructed in relation with these ideas according to the methodology QAS99 and were reduced by Delphi iterative methods among experts. Finally, the bank of items was tested to verify its feasibility and face validity.

Results.— Forty-one individuals were included in the focus groups. Verbatims were processed in 333 initial items grouped into 5 domains: physical symptoms impact, self-perception and projection into the future, satisfaction of environ-

ment and accessibility of care, activities and participation, optional respiratory module. After Delphi methodology, number of items was reduced to 114 items. Fifty-six multicenter patients, kindly filled the item bank. The average duration was 32 ± 14 minutes. The acceptability, understanding and level of item responses were analyzed and modified if necessary.

Discussion.— The final item bank is made feasible, accepted by patients with neuromuscular diseases. A second stage, structure validity and the metric of the tool is in progress.

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HADS scale in adults suffering from Steinert myotonia: Reproducibility and internal consistency

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Keywords: Questionnaire; Reproducibility; Internal consistency; Depression; Muscular diseases; Dystrophy myotonia

Introduction.— Screening for anxiety and depression is likely to be overestimated in patients with physical disabilities such as Steinert dystrophy patients. This overestimation results from the high weight of scores for items assessing motor adynamia and in the other hand, the characteristic amimic face these patients present. Hospital Anxiety Depression Scale (HADS) has the advantage of not inquiring items on motor skills. This work seeks to verify the reliability of the anxiety and depression HADS subscales and their reproducibilities in patients with Steinert myotonia.

Materials and methods.— Thirty-five patients suffering from Steinert myotonia (11 men, 24 women) responded twice to the HADS questionnaire. The delay between the two HADS evaluation was on average 18 ± 12 days. It was verified by examination that no health problem had occurred between test and retest of the questionnaire HADS. The HADS is a self-administered questionnaire comprising 14 items, 7 items measuring the depression likelihood, 7 other items assessing the anxiety risk. The reliability of two subscales was checked by calculating Cronbach alpha coefficients and test-retest reproducibility of the scores by intraclass correlation coefficients (ICC).

Results.— For the subscale 'anxiety' test and retest scores were respectively 7.94 ± 4 (1–19 min–max) and 6.42 ± 3.68 (1–14 min–max). The coefficient Cronbach's alpha of the 7 items of the subscale 'anxiety' was satisfactory at 0.74. The ICC was good at 0.77. Six patients had a score $\geq 11/21$ relating a pathological anxiety (17%).

For the subscale 'depression', test and retest scores were respectively 5.85 ± 3.75 (1–16 min–max) and 5.94 ± 4.25 (0–18 min–max). The Cronbach's alpha was 0.82 and ICC 0.92. Four patients were therefore screened as 'depressed' (12%).

Conclusion.— The HADS is a self-administered questionnaire which measures reliability and reproducibility features of anxiety and depression in Steinert myotonia peoples.

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